

CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-17 (Canceled)

18. (Original) A method for using a single-instruction multiple-data (SIMD) instruction to perform a function, wherein the SIMD instruction uses M arguments, wherein the function uses N variables, wherein M and N are not the same, the method comprising

using the SIMD instruction on a plurality of packed values to obtain an approximate packed value result;

adjusting the approximate packed value result to obtain an adjusted packed value result, wherein the adjusted packed value result is in a predetermined relation to a desired exact result; and

using the adjusted packed value result in an FIR calculation.

19. (Original) The method of claim 18, wherein the SIMD instruction includes an averaging operation

20. (Original) The method of claim 19, wherein the step of using the SIMD instruction includes using a PAVG instruction.

21. (Original) The method of claim 18, wherein the predetermined relation to a desired exact result includes ensuring that the adjusted packed value result is no more than the desired exact result.

22. (Original) The method of claim 18, wherein the predetermined relation to a desired exact result includes ensuring that the adjusted packed value result is no less than the desired exact result.

23. (Original) The method of claim 18, wherein the predetermined relation to a desired exact result includes ensuring that the adjusted packed value result is within a predetermined threshold of the desired exact result.
24. (Original) The method of claim 18, wherein the predetermined relation to a desired exact result includes adjusting the adjusted packed value result to be closer to the desired exact result.
25. (Original) The method of claim 18, wherein the step of adjusting the approximate packed value result includes a substep of adding the value 1 to the approximate packed value result.
26. (Original) The method of claim 25, wherein the substep of adding the value 1 further comprises using a saturated add.
27. (Original) The method of claim 18, wherein the step of adjusting the approximate packed value result includes a substep of subtracting the value 2 from the approximate packed value result.
28. (Original) The method of claim 18, further comprising determining a correct least significant bits of a desired exact result.
29. (Original) The method of claim 18, further comprising determining an error amount for the approximate packed value result; and adjusting the approximate packed value result in accordance with the error amount.
30. (Original) The method of claim 20, further comprising detecting when a PAVG operation would be applied to two same operands and, if so performing the step of omitting application of the PAVG operation and using one of the same operands values as the result of the PAVG operation.

31. (Original) A computer-readable medium including instructions for using a single-instruction multiple-data (SIMD) instruction to perform a function, wherein the SIMD instruction uses M arguments, wherein the function uses N variables, wherein M and N are not the same, the computer-readable medium comprising one or more instructions for using the SIMD instruction on a plurality of packed values to obtain an approximate packed value result;

one or more instructions for adjusting the approximate packed value result to obtain an adjusted packed value result, wherein the adjusted packed value result is in a predetermined relation to a desired exact result; and

one or more instructions for using the adjusted packed value result in an FIR calculation.

32. (Original) An apparatus for using a single-instruction multiple-data (SIMD) instruction to perform a function, wherein the SIMD instruction uses M arguments, wherein the function uses N variables, wherein M and N are not the same, the apparatus comprising

a processor coupled to a storage device;

one or more instructions stored in the storage device for using the SIMD instruction on a plurality of packed values to obtain an approximate packed value result;

one or more instructions stored in the storage device for adjusting the approximate packed value result to obtain an adjusted packed value result, wherein the adjusted packed value result is in a predetermined relation to a desired exact result; and

one or more instructions stored in the storage device for using the adjusted packed value result in an FIR calculation.